PERSONAL COMMUNICATIONS

DATA TERMINAL

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DATA TERMINAL

PORTABLE COMMUNICATIONS TERMINAL

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APPENDIX

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INTRODUCTION

How to Use This Manual

Features and Purchase Options

Electronic Mail

Data Bases

INTRODUCTION

Congratulations, you have purchased a genuine marvel of modern, electronic technology! This DATA TERMINAL will be your window into the world of computers and data communications. With it, you will be able to access data bases in remote cities, utilize giant computers, participate in electronic mail, or inquire into the latest quotes on the stock market. Better still, you will be able to do all of these things and more without ever leaving the safety or convenience of your home or office.

In addition, this terminal is so small, so lightweight, and uses so little power that you can take it with you as you travel on vacation or business. It may be used in a motel room, a boardroom, or a stateroom. It takes up very little space in a standard brief case. In most cases there is still room for books, reports, or your overnight travel gear.

But it is more than just the best looking professional quality terminal around. It also contains a simple yet powerful local editing capability and storage that won't go away on you. You can edit stories, letters, or reports at a location with no convenient telephone. Then, move to a place where there is a telephone to transmit the text to the remote computer. In fact, the EDITOR in your DATA TERMINAL is as capable as some word processors, and it is a lot more portable.

The DATA TERMINAL allows you to capture all of the data as it comes in off the telephone line. The data is tucked away in the memory of your choice. Later you can review and edit this information at a time convenient to you.

The next pages summarize some of the features of your DATA TERMINAL. The Quick Reference chapter is for your convenience after you become familiar with your DATA TERMINAL. It is at the front of the manual so that you can find it quickly when you need it.

It's important to note that in order to use the Quick Reference you should study the rest of the manual first.

The rest of this manual will tell you how to get at the features and make them work for you. So read on. Enjoy your good fortune at having one of these fine instruments. And, get ready to participate in the data communications revolution.

FEATURES AND PURCHASE OPTIONS

HELP

When you are operating your DATA TERMINAL, you can get instant HELP from the built-in HELP function. Simply press the HLP key. The display will tell you to "select a key" for an explanation of that key. Once you have selected the key in question, you can use the down arrow key to see more information.

You are always in control of the HELP function. To bypass the HELP information for one key, and to get HELP for a new key, press the XIT key and then the key in question. Press the XIT key again when you are all done with HELP.

Portable size 10.5 inches wide
5.25 inches long
1.75 inches tall

Light weight 2 pounds

Full ASCII 73 key keyboard

Truly silent 40 column LCD display
- Upper and lower case
- 5 X 10 dot matrix characters with descenders

Built In Help features

Built in Calculator

Dow Jones sign-on button

Built in 300 bps modem
- Originate or answer
- Full or half duplex
- Bell 100 series compatible
- FCC approved handset direct connect

Battery backup on memory

Configuration options are set from keyboard and kept in non-volatile storage.

Optional parity and control character checks.

LCD status indicators

Options	Line Ready	Low Battery
On Line	Send	Text Up
Local	Save	Text Down
Memory	XOFF	Text Left
Calculator	Traffic	Text Right
Printer		

Optional XON-OFF protocols

Programmable RETURN KEY

Optional Answer-Back

Built in clock with wake up alarm

Power requirements 115v AC 3 watts 60 Hertz or batteries
Operating temperature range: Normal Office Environment

AC Adapter/Charter (UL and CSA Listed)

Batteries required are 4 "AA" size Alkaline or NiCad and 1 9v Alkaline or NiCad. Make your selection by using switches in the battery compartment.

Purchase options - Acoustic cups

Set battery switches are indicated in the battery compartment

Switch	Mem	9V	AA
Guide	Kill On	Aik NiC	Aik NiC

ELECTRONIC MAIL

The term ELECTRONIC MAIL usually refers to one of two kinds of "written" communications. One kind is a method of producing real paper letters and memos. This type is sometimes called computer generated mail. You can type into a computer, with a terminal, in one city. The computer will print your letter in another city, to be mailed to the addressee. Most computer generated mail systems allow you to keep a list of many people to be sent mail. So, you can type a letter one time. The computer could then send it to then thousand people, all over the country.

The other type is a Computer Based Message System (CBMS). Many recent college graduates have used the "mail" functions of the university computers. Students can send messages to other students by typing the message in on a terminal. When the other student, the addressee, signs on to a terminal to work, they can read the message.

This same kind of service is now offered by several computer service companies. In fact, some companies have their own message systems installed in the company computers.

Electronic Mail is a way to be sure that communications take place with few or no problems. With telephone calls, the other person is often "out of the office". Then, when the call is returned, the original person may also be out of the office. Time zones can further complicate the problem. If a sales person is traveling around to different customers, perhaps in different cities, it can be almost impossible to have decent communications.

Send a message to someone with Electronic Mail. That person will get the complete message as soon as they check in for messages. This message is not just a request for a conversation. The actual message can be communicated. "Please see Mr. Abercrombie at Almagamated International at three this afternoon. He needs a quote on the 500,000 piece price for part number 12345ABC. His daughter's birthday party is tonight."

All kinds of Electronic Mail systems have some things in common.

1) You should be able to sign on the system with a local phone call for most cities in the U.S. With your DATA TERMINAL, you can sign on right from a telephone booth in an airport.

2) There is an On-Line EDIT or COMPOSE mode. This mode allows you to create a message or to alter the wording of a message. The LOCAL edit functions of your DATA TERMINAL allow you to perform the same functions, without hooking up with the system. You can minimize your connect time charges this way. More importantly, the DATA TERMINAL editor is easier to use than most On-Line Text Editors.

3) You can SEND messages. This seems obvious. But, it is a step that you must do, after you have composed your message. The message is under your control. It will not be sent until you SEND it. Different systems use different commands for this and the other functions.

4) You can SCAN or READ your incoming messages. That way, you can read the most important ones first.

5) Some systems maintain a long term reading file for you in CHRONOlogical order. This feature can be very handy if there is a question about whether a message was ever sent or received. There is a cost for the storage space, however. It is usually a small charge. Be sure to periodically review the contents of the file. DELETE the things you no longer need.

6) In some cases you may want to tag a letter with an acknowledgement code. This function acts like a receipt on a certified letter. When the addressee reads the message, a note to that effect into your reading file. You will know if you messages were received.

7) It is usually easy to ANSWER a message. When you are reading a message from someone, type the command for answer, and the system makes it easy for you to send a message back. This function is not magic. It just allows you to, conveniently, skip a couple of steps in the process.

DATA BASES

One of the more useful functions of a terminal is to get information on a timely basis. There are many computer based libraries with interesting information available. These services are called "Data Bases". Most Data Bases are not free. You will need to pay an initiation fee and monthly usage fees for the time you actually use. A brisk competition is shaping up among some of the Data Bases. Check around for the price and services you want.

Q U I C K R E F E R E N C E

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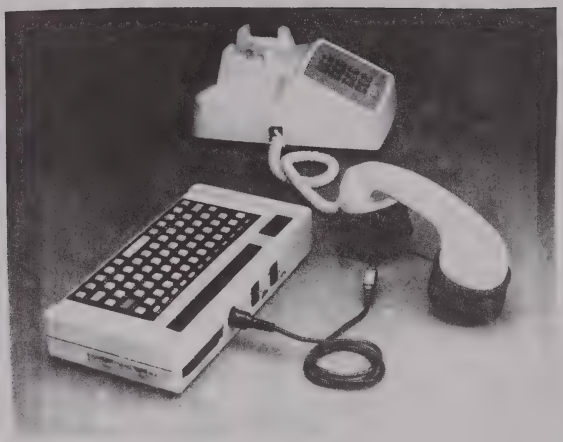
Editor Operation
Index Operation
Calculator Operation

WARNING - Never plug in or unplug the AC adapter when the power switch is in the "ON" position. The adapter is made to operate on 115v AC or 220v AC. You must have the switch on the adaptor set correctly.

Before you start to use your DATA TERMINAL make sure that the memory "kill" switch in the Battery Compartment is not in the "kill" position.

HOOKING UP TO THE TELEPHONE

Acoustic



Direct

OPERATION AT A GLANCE

(All of the following operations are explained in detail in later chapters. These quick references are given as memory joggers)

Getting Started and On Line

1) Make the proper connections as shown.

2) Turn the power on and type in your Personal Password.

3) Set the Modem Mode Switch to ORIGnate.

4) Take phone off hook.

5) Dial the computer

6) Set Communications Mode switch to DIRECT or ACOUSTIC.

7) Wait for the LINE READY indicator.

8) Sign on by typing your data followed by ENTER.

9) At end of session --sign off
--hang up the phone

Dow Jones Operation

1) Make the proper connections to the telephone.

2) Dial the local access number (TYMNET, TELENET).

3) When the screen asks for your terminal identifier, press the DJ key. Your password and your portfolio must already be in memory. Memory "x" is the file which contains your Personal Portfolio. Be sure to include the Dow Jones command: DISC, as the last entry in your portfolio file.

4) Sign off when all the data is in your DATA TERMINAL.

5) All of the data are in memory "dj" for review.

NOTE: If you only wish to sign on, and you do not care to update your portfolio, press and hold the CTL key while you press the DJ key.

SHIFT and CTL

Two keys are marked SHIFT and one key is marked CTL. These keys are used to change the function of other keys. When the instructions say to press, for example, SHIFT and LOCAL, you should press SHIFT first and hold it down while you press LOCAL or whatever the other key is. The CTL key works the same way.

Editor

1) Press SHIFT and LOCAL . The LOCAL indicator will turn on.

2) Type the label of the file you will work on. You may create up to 20 files. The label may be one letter, number or punctuation mark.

3) Enter and edit your text.

4) At the end of the session, press XIT .

Send text over the telephone

1) Get ready for on line work.

2) Press SHIFT and SEND.

3) Type the file label you wish to send. The SEND indicator will be on.

4) Wait for the send indicator to go out.

Save text into a file

1) Get ready for on line work.

2) Press SHIFT and SAVE . The SAVE indicator will be on.

3) Type the label of the file you wish to save into.

4) Perform your normal on-line work. The data you receive will be captured and saved in memory.

5) When you are through saving data, turn off the save function. Do this by typing:

SHIFT and SAVE again.

LOW BATTERY

When the Low Battery status indicator is on in the USER Information Panel, you do not have too much time left. The unit will run for only 5 to 10 more minutes without charging. To help remind you of the condition the audible beeper will sound off every 10 seconds.

The battery compartment is in the bottom of your DATA TERMINAL. The 2 switches (9V and AA) must each be set to match your battery types.
ALK for alkaline.
NiC for NiCad.

FAILURE TO DO SO MAY DAMAGE YOUR DATA TERMINAL.

CONFIGURATION OPTIONS OPERATION

1) Press SHIFT and SET .

2) Press CHG .

3) Use the UP, DOWN, LEFT, AND RIGHT arrow keys to move the display window and the cursor to the item you wish to change.

4) Type the CHG key to change the selected option.

5) When you are done, press the XIT key twice.

CLOCK SETTING

1) Press the SHIFT and SET .

2) Use the right arrow to select: CLOCK then press CHG .

3) Use the left and right arrows to select the clock item.

4) Use the up and down arrows to change the item.

5) Press the XIT key twice.

ALARM SETTING

1) Press SHIFT and KEY.

2) Press the right arrow twice to select: ALARM. Then, press CHG .

3) Change the alarm time as you would the clock time.

4) Set the alarm to ON with the UP ARROW key.

5) Press XIT twice.

Your DATA TERMINAL must be ON for the alarm to work. When the alarm sounds, press the XIT key to turn it off.

OPTIONS DISPLAY SCREENS

The following is a list of the options display screens. Items surrounded by < > are the values you may choose between. These are changed with the CHG key. The rest of the words are there to make it easy to find the one you want.

---

terminal-configuration <factory>
<custom>

---

parity <even> inhibit <off> err-detect <off>
<odd> <on> <on>

---

character-data-bits <8> modem-speed <300>
<7> <110>

---

duplex <half> control-characters <off>
<full> <on>

---

alpha-keyboard <capital> beeper <off>
<normal> <on>

---

end-of-line-sequence <carriage-return>
<memory-z>

---

transmit-mode <-->> <auto>
<xon> <xoff>

Login-date/time <off> answer-back <off>
<on> <on>

---

network-select <telenet> clock-mode <12 hr>
<tymnet> <24 hr>

ON LINE OPERATION

▲	Display previous line (if any)
▼	Display Next line--after Up was used
ALL	Start playback of receive buffer
INDEX	Display memory usage report
CLOCK	Display the clock
GO	Resume playback of receive buffer
(LOCAL)	Switch over to Editor operation
DJ	Dow Jones sign on and portfolio processing or with CTL just sign on
ENTER	End of line-- CR or memory Z .

You get some of these keys by holding the SHIFT key down as you press the key you want. These keys are printed in parentheses. For example: (SET). The captions for these keys are printed on the body of the DATA TERMINAL.

The arrow keys, like the ALL key, start up the PLAYBACK mode. In this mode, all 4 arrows will rotate in the User Information Panel. Press the XIT key to get out of PLAYBACK and back to On Line operation.

ON LINE OPERATION

Transmit a BS (CTL-H) character	RUB
Modify other keys	CTL
Modify other keys	SHIFT
Obtain help	HLP
Transmit an ESC character	ESC
Transmit the BREAK condition and abort any SAVE or SEND operation	(BREAK)
Change the clock, alarm, or options	(SET)
Start calculator operation	(CALC)
Clear the display and buffer	CLR

EDITOR OPERATION

◀ Move the cursor left one character
▲ Move the cursor up one line
▼ Move the cursor down one line
▶ Move the cursor right one character

Press and hold SHIFT with an arrow to move to the extreme position in the direction you choose.

LABEL	Assign a new label to the rest of this file
ALL	Display the file from the start
SEARCH	Find a string in the file--press twice
INDEX	Display the current list of files
CLOCK	Display the clock
CTL and	CLOCK Insert the clock into the file
GO	Display the file from current position

DJ
ENTER

The ALL key starts up the PLAYBACK mode. All 4 arrows will rotate clockwise in the User Information Panel. While PLAYBACK is going on, you can freeze the screen, move up or down a line at a time, or GO back to a moving PLAYBACK after you freeze. Press XIT to get out of PLAYBACK and back to EDITOR operation. Any data key you type will also exit back and will be inserted into the file.

EDITOR OPERATION

Erase the rest of this line	LINE
Erase the rest of this word	WORD
Erase the last character	RUB
Modify other keys	CTL
Modify other keys	SHIFT
Obtain help from electronic manual	HLP
Generate an ESC character	XIT
Exit from EDITOR operation	CLR
Activate CALCULATOR operation SHIFT and	(CALC)
Copy CALCULATOR memory into file CTL and	(CALC)

SPECIAL NOTE: the first line of a file can contain some special controls. This line is the FORMAT LINE. You may need it for MARGIN WARNINGS, PROGRAMMED PAUSES, OR PROGRAMMABLE FLOW CONTROL. The line starts with an ESC character and ends with a CR ( ) character. All of the controls needed in a file are in the one and only format line for the file.

The standard margin warning is a beep when you create a line that is 72 characters. If you wish to set the margin warning to a different size, you must enter a format control line as the first line of text in your file. The very first character must be the ENTER character. The next thing is the new margin warning value. Finish the line with an ESCAPE key.

For example: ^{E}s25

will produce a margin warning at 25 characters.

INDEX OPERATION

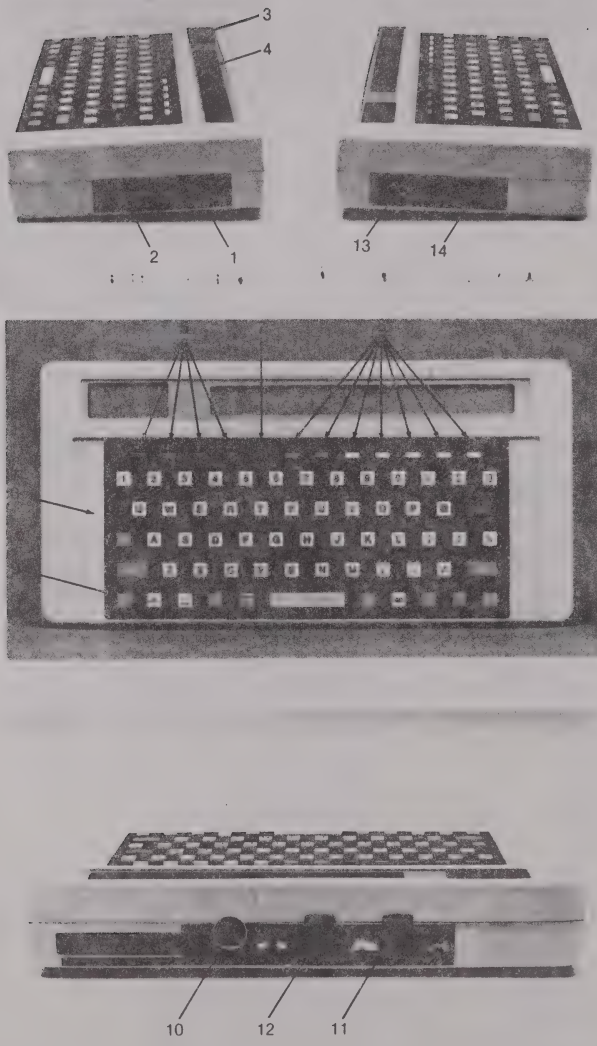
▲	Display previous file--if any
▼	Display next file--if any
CLOCK	Display the clock
HLP	Obtain help from electronic manual
XIT	Exit from INDEX operation
CLR	Erase a file from the index and from memory

CALCULATOR OPERATION

Copy the accumulator to memory (also used to clear memory)	◀
Swap the accumulator and memory	▼or▲
Copy memory to the accumulator	▶
Add	+
Subtract	-
Multiply	x
Divide	/
display results	=
Add accumulator to memory	M+
Subtract accumulator to memory	M-
Decimal point	.
Change sign of accumulator	+/-
Display the Clock	CLOCK
Obtain help from electronic manual	HLP
Exit from CALCULATOR operation	XIT
Clear Entry and Clear Calculator	CLR

F A M I L I A R I Z A T I O N A N D O P E R A T I O N

Communications Mode Switch
Acoustic
Talk
Direct
Modem Mode Switch
Originate
Answer
Wait
Personal Access Password
User Information Panel
40-Character LCD Display
Cursor and Window Mover Keys
Keyboard
Receptacle for Acoustic Cups
Handset Receptacle
Base Receptacle
AC Adapter Receptacle
Power On-Off Switch


3
4
2
1
13
14
10
12
11

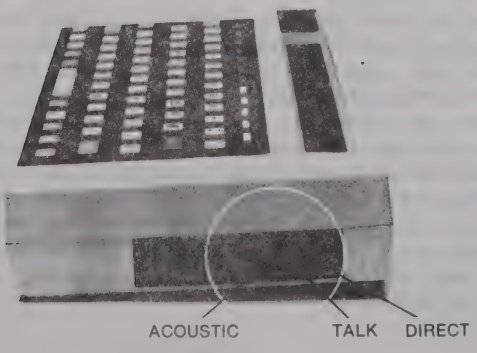
F A M I L I A R I Z A T I O N A N D O P E R A T I O N

The general layout of the DATA TERMINAL is shown in the figures. It is a good idea to become familiar with the location of the various controls, switches, and indicators before you begin operation of the terminal. The numbers in the figures identify items which are explained in the following key.

number	description
1	communications mode switch
2	modem mode switch
3	User Information Panel
4	40 character LCD display
5	cursor and window mover keys
6	ASCII keyboard
7	Dow Jones button
8	Special purpose keys
9	Help key
10	receptacle for acoustic cups
11	handset receptacle
12	base receptacle
13	Adapter charger receptacle
14	power on-off switch

You need not be connected to a communications network to use the DATA TERMINAL. In fact, it may be easier for you to get to know this marvelous tool and its features if you experiment with it off-line before you attempt to communicate with remote computers or terminals.

The rest of this chapter describes the controls and connections required in detail. The wise owner will read this chapter carefully and completely before plugging the DATA TERMINAL in or turning the power on.



COMMUNICATIONS MODE SWITCH

This switch selects one of three ways to connect the DATA TERMINAL and the telephone system. Just which of these ways is most useful to you depends on the kind of telephone equipment you use. The modem built in to the DATA TERMINAL, together with the optional acoustic cups, provide you with a great deal of flexibility. The communications mode switch allows you to connect directly to the telephone system or to connect by means of an acoustic coupler (if the telephones are not set up with the new "modular" jacks).

The actual connections to the telephone system are discussed in the later sections on the receptacles. For now, we will just discuss the three settings on the communications mode switch.

Acoustic

This position selects the mode in which the terminal is connected to the telephone system by air. No direct wiring is used. Instead the handset from the telephone you will use is inserted into the rubber cups.

Be sure that you seat the handset firmly into the cups as indicated by the little diagram on the cups themselves.

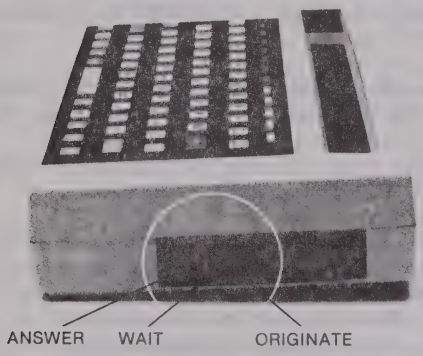
One of the cups contains a microphone and the other contains a speaker. You must be sure that DATA TERMINAL can listen when the remote device talks, and vice versa. All of the necessary electronics to match up the audible signals with the electronic signals in the terminal are a standard part of the DATA TERMINAL.

Talk

This position of the switch is useful if you have a modern telephone handset which plugs into the base unit with a small modular connector. When you have selected TALK, you can do just that. Your telephone now functions as "just" a telephone. The DATA TERMINAL need not be turned on for this position to work. Some people commonly use the telephone on their office desk as both the human communications device it was designed to be and as the computer interface the DATA TERMINAL can allow it to be, by proper use of the TALK position. It is also comforting, sometimes, to dial up a data network with the communications mode switch in TALK. Then, when you hear the answer tone from the other end, switch over to DIRECT or ACOUSTIC.

Direct

In this position, the DATA TERMINAL is directly connected into the telephone system. It is ready to access remote computers, data bases, time sharing services, and other terminals. This means of connection eliminates some of the possibilities of noise creeping into the communications link which can happen with acoustic couping. DIRECT is the simplest connection scheme, and it is the best.



MODEM MODE SWITCH

The DATA TERMINAL and the remote device you are communicating with can transmit at the same time. The MODEM MODE SWITCH allows you to choose a set of frequencies so that your DATA TERMINAL and the remote device communicate properly. This protocol which allows 103A type devices to communicate uses four frequencies for all communications. The low set ooooh and aaaah are called ORIGINATE while the higher set, OOOOH and AAAAH are referred to as ANSWER. You need to know which way the remote device is set to operate. Then switch your DATA TERMINAL to the other way. You are ready to talk and listen with no confusion. In most cases, set your DATA TERMINAL to ORIGnate.

The WAIT position of this switch is used to converse the modem battery. If you are not actually linked to a remote computer or terminal, the switch should be in WAIT.

FAMILIARIZATION AND OPERATION

PERSONAL ACCESS PASSWORD

Your DATA TERMINAL is a valuable piece of equipment. It has convenience features built in to it to permit easy access to remote computers and data bases. Because of these things, it is possible for anyone who operates your DATA TERMINAL to gain access to private or confidential information or to run up excess charges from data utilities.

The personal Access Password is designed to prevent unauthorized access to data utilities or secure information. To use the DATA TERMINAL, you must correctly type in a password each time the machine is turned on.

You may change the password whenever you wish. First, start up the EDITOR by pressing SHIFT and LOCAL . Then, when the screen asks for the file name, press:

CTL and PW .

The screen will prompt you about what you should do. From that point on, you must use the new password when you turn the DATA TERMINAL on. Press CLR if you do not want a Personal Access Password, then XIT . When the entire new password is entered, you type the XIT key. We strongly recommend that you use a Personal Access Password. A good password to use is your middle name spelled backwards.

If you should ever forget your Personal Access Password, you must erase ALL of the DATA TERMINAL memory. This erasure will remove all of your confidential data and any other data utility passwords in the machine. You will be starting from scratch. You erase all of the memory by throwing the MEMORY switch in the battery compartment. BE SURE TO SWITCH IT BACK ON after you switch it off.

USER INFORMATION PANEL

OPTIONS	LINE READY
ON LINE	SEND
LOCAL	SAVE
MEMORY	XOFF
PRINTER	TRAFFIC
CALCULATOR	LOW BATTERY

F A M I L I A R I Z A T I O N A N D O P E R A T I O N

The picture shows the sixteen LCD indicators of the DATA TERMINAL User Information Panel. These indicators are messages or arrows. Their function is to provide the operator with some necessary or convenient information. The indicators are either ON or OFF. The following descriptions of the functions of the indicators apply to one which is turned on.

LINE READY — Indicates that the modem in the DATA TERMINAL and the remote modem (at the other end of the telephone link) are both ready for you to communicate.

TRAFFIC — Indicates that a character has recently arrived at the DATA TERMINAL from the telephone link or that the DATA TERMINAL is sending out over the link.

ON LINE — Indicates that the DATA TERMINAL is in the communications mode. In this mode, you can send data to a remote device.

LOCAL — Indicates that the EDITOR is active. You can compose or change a text in the DATA TERMINAL memory. For complete details of the operation of this mode, please read Chapter 4.

While the EDITOR is active, the DATA TERMINAL will continue to monitor the telephone link. If a data character is received, three things will happen.

1) The DATA TERMINAL will store the character in the communications buffer so that you can read it later, if you wish.

2) The TRAFFIC indicator will be on.

3) The beeper will sound.

MEMORY — Indicates that there is at least one file of text in the DATA TERMINAL.

OPTIONS — Indicates that the DATA TERMINAL is ready to be customized (by changing its optional configuration), to set the alarm, or to set the clock.

CALCULATOR — Indicates that the DATA TERMINAL is operating as a calculator. The number on the right side of the screen is the ACCUMULATOR. All of your work is done in the accumulator. The number on the left side of the screen is the memory. In between them, you will find the operation in progress (in case you forget).

SEND — Indicates that the DATA TERMINAL is currently sending a file over the communications link.

SAVE — Indicates that the DATA TERMINAL is currently saving the data it receives into a file.

XOFF — Indicates that the DATA TERMINAL is pausing while sending data. The remote device will send a code to the DATA TERMINAL when it is ready for more data. DATA TERMINAL can out run many remote computers. This means of controlling the flow of data is useful in many situations.

PRINTER — Indicates that the Printer is optional.

LOW BATTERY — Indicates that the batteries must be either replaced (if they are alkaline type) or recharged (if they are NiCads). In any case, use your adapter to be safe. The beeper will go off every 10 seconds. Press the HLP key to find out which battery is low.

◀ Indicates that there is something to the left of the cursor, ON THE CURRENT LINE.
▲ Indicates that there is something above the cursor.
▼ Indicates that there is something under the cursor.
▶ Indicates that there is something to the right of the cursor, ON THE CURRENT LINE.

40-CHARACTER LCD DISPLAY

This display is the primary means you have of reading the information in your DATA TERMINAL or the information you are getting from remote computers or terminals. There is room for 40 characters to be displayed at one time. When more than 40 characters need to be read, the data can "scroll" through the display like the old newspaper headlines did in Times Square. In some cases, the DATA TERMINAL "knows" that there are more lines for you to read. The up and down arrows in the User Information Panel tell you if there are other lines "above" or "below" the line currently in the display.

Chapter 2

FAMILIARIZATION AND OPERATION

Think of the 40-characters display as a window looking at a page of print. The arrows tell you where other data is. The green arrow keys let you look at it.

Characters themselves are displayed with little square dots. Each character is made up from some of the dots chosen from a rectangular formation of dots. A formation contains 10 rows of 5 dots each. There is an imaginary line running through the display, like a line of school note paper. Lower case (small) letters, like g and y, are formed from dots above and below this line. Upper case (CAPITAL) letters and most other characters are kept above the line. That way, the letters look like letters instead of some computer's impression of letters.

Most of the time, the display is ready for you to type into. The active place on the display, where you can type, is marked by a special device called a cursor. The cursor looks like a single underline. It shows you exactly where your next character will go.

CURSOR AND WINDOW MOVER KEYS

The four green keys at the top of the keyboard are the cursor and window mover keys. Each of them has an arrow printed above it. The arrow tells you which way the cursor will move when you press the key. If the place the cursor would move to is not in the window, the window is moved so that the key will work. Remember that pressing the SHIFT key and the ARROW key at the same time causes the cursor to go to the left or right end of the line or to the top or bottom of the text depending upon the direction of the ARROW key.

KEYBOARD

The keyboard of the DATA TERMINAL contains keys which are molded in six colors. Figure 1 shows the keyboard layout. Generally speaking, the keys produce the result which is engraved on the top of the key. The exceptions are these. First, the thin keys along the top row produce the function printed just over them. Second, most of the keys produce a second function when the SHIFT key is held down while they are pressed. This second function is printed just over the keys. Third, some of the keys produce yet another function when you hold the CTL key down while pressing them. Key functions that require a shift are printed, in this manual, in parentheses, for example, (SET). You should also note that most of the keys will repeat when held down. If, for example, you hold the A key down while in Editor, the letter "A" will be printed across the screen until you release the key.

Forty-nine of the keys are light gray in color. These are the keys which are normally used to type data over the telephone line or in the DATA TERMINAL local memory. One of the blue keys (marked ENTER) is normally used to identify the end of a transmission or logical line. The other blue key (DJ) is used to sign on to the DOW JONES NEWS/RETRIEVAL SERVICE and, if desired, access a personal portfolio of information. The remaining ten dark gray keys are special purpose keys for control of the DATA TERMINAL terminal. These keys are explained below:

SHIFT — The two keys marked SHIFT are electrically the same. They provide a convenient way to shift the keyboard with either hand. When the keyboard is in the NORM or lower state, hold the shift key down as you press any data key in order to get the upper case character from that key. For the keys with letters on them, the upper case character is the capital letter. For the other keys, the upper case character is the character printed engraved on the body of the DATA TERMINAL.

When the keyboard is in the CAPITAL state, the function of the keys with letters on them is reversed. In this state, a letter key produces capital letters. A SHIFT key and a letter key together produces a small or lower case letter. This feature is handy when using some time sharing computers.

CTL — This key is used to produce the data communications control characters. They are listed in Appendix A. The CTL key is held down while the proper data key is typed.

Neither the CTL key nor the SHIFT keys will produce an audible beep when they are pressed. That is because none of them actually produce any data. Instead, these keys modify the data which is produced by another key. When you press the key to be modified, the beep will sound (if you have the option set). For a full discussion of the beep option, please read Chapter 3.

DJ — This button is used to access DOW JONES NEWS/RETRIEVAL service for information about your Personal Portfolio kept in memory "X".

WARNING -- you need to have the DJ Password Stored. Press SHIFT and LOCAL then the PW key to enter the password. This operation only needs to be done once.

CTL and DJ	Just sign on to DOW JONES. Do not process Personal Portfolio.
LINE	Erase the rest of this line (EDITOR).
WORD	Erase the rest of this word (EDITOR).
LABEL	Give a new label to the rest of this file.
ALL	Start playback of the entire file (EDITOR) or the receive buffer (ON LINE).
SEARCH	Look for a bunch of characters (EDITOR).
INDEX	Display a report about memory use. The report gives the labels of all files, their sizes, and how much memory is not used.
CLOCK	Display the current day, date and time.
CTL and CLOCK	Transmit the clock (ON LINE) or insert the clock into the file (EDITOR).
HLP	This key is used to activate the DATA TERMINAL function. Every unit contains its won copy of an electronic manual. With this feature you can press any of the keys to get information on the function of that key. If you are unsure about which key does what, just ask for HELP. When you are done with the HELP function, press the XIT key. Look at the display. If it still reads a HELP message, press the XIT key again. You may have been in the middle of a HELP paragraph when you pressed XIT the first time.
ESC	This key produces an ESC control character. Some computers and networks use this character so often that it is included without needing to press CTL to get it.
(BREAK)	This key is used to produce a very special condition on the telephone link. Some computers need it. You have it.
RUB	Use this key in LOCAL to erase this character in the screen to the left of the cursor. Use it twice, and the last two characters are removed. ONLINE, the key produces a BS code (BACKSPACE).

PW — By itself, select your DOW JONES password for the EDITOR. It is also used, with CTL to change your Personal Access Password.

(SET) — This key is used with the SHIFT key to start CONFIGURATION/CLOCK SETTING operation. As you already know, Chapter 3 is a complete discussion of this function.

CHG — Change the setting of a configuration option or the alarm.

(CALC) — This button is used with SHIFT to start up CALCULATOR operation.

CTL and (CALC) — The memory of the CALCULATOR is copies into the file (LOCAL) or to the remote computer (ON LINE).

GO — Use this key to resume playback of a file (EDITOR) or the buffer (ON LINE).

(LOCAL) — This key when used with the SHIFT key starts EDITOR operation. The EDITOR is a major capability. Chapter 4 is devoted to it.

XIT — This key is used to exit from a form of operation, back to what you were doing. XIT is used to get back out of:

CALCULATOR
INDEX
PLAYBACK
CLOCK SETTING
ALARM SETTING
HELP
EDITOR
PASSWORD CHANGING
CONFIGURATION CHANGES

(SEND) — This key is used with the SHIFT key to transmit the contents of a DATA TERMINAL file. When on line, you press this key (while holding the SHIFT key down) and the DATA TERMINAL will ask which file is to be sent. You type a label, and all of the data in that file is sent. The SEND indicator will be on in the User Information Panel. To Send a file, you must have established a link with a remote modem. The LINE READY indicator must be on.

DATA TERMINAL is either an 110 or 300 bit per second terminal. A full memory of 14000 characters will take about 7 or 15 minutes to send. During the time that text is being transmitted, no other activity should take place on the DATA TERMINAL.

CTL and (SEND) — This key transmits a DATA TERMINAL file with no special processing. An exact image of the file is sent.

(SAVE) — This key is to activate and deactivate the TRAFFIC save function. Press SHIFT and SAVE once. The DATA TERMINAL will ask you which file to save the data in. You respond with a single key for the file label. All of the data the DATA TERMINAL receives (up to the limit of the available memory) will be saved for you to review later.

Press SHIFT and SAVE again to stop. The SAVE indicator in the User Information Panel is on while you are saving.

ENTER — This key is normally used to end a line of text. The line is then transmitted (if the DATA TERMINAL is ON LINE) followed by an End of Line message. The End of Line message is usually a CR (carriage return) character. Options mode is described in Chapter 3.

This next short discussion may be too technical for most users. Read if only if you need the special capabilities described.

The format line can contain more than just the margin warning value. Special purpose clauses may also be included between the margin warning value and the carriage return.

PROGRAMMED PAUSES--PC =

You may wish to put a sign on procedure into a file. Then send the file, with all of the names and passwords, to make signing on to a service easy. But even if you put everything necessary into the file, the sign on may not work. The problem in these cases is usually that your DATA TERMINAL is sending some parts of the data before the computer or the network is ready. We need to slow things down a little, at carefully controlled places.

1) Choose a character to be your PAUSE CHARACTER. This character can be different in different files. Select a character that is not a part of your sign on procedure. "$" and "*" are good ones. Let's pretend you choose "$" for the rest of this discussion.

2) Type the following clause into the format line:

PC = $

Leave a space at either end and on spaces in the clause. The clause has just 4 characters in it.

3) At every place in your file you want your DATA TERMINAL to stop and pause for 5 seconds, type: $$$$$. Use different numbers for different lengths of time. The pause character will not be sent. You may need to experiment to find the correct places to pause and the correct number of seconds. Most pauses should be at the very start of a line.

Here's an example on how to set up an auto-logon file:

1) Select a file by typing SHIFT and LOCAL simultaneously.

2) Program your selected pause character according to the following format:

(ESC) (Space) PC = $(Space)ENTER

The pause character used in this example is the symbol $, but it can be any character.

The first line in your file would then look like this:

E_sPC=$

3) Type your auto-logon. For example, to access the DATA TERMINAL Exchange, type the following into the logon file:

ENTER
$$$$(user name or alias)ENTER
$$$$(password)ENTER

Your auto-logon would look like this:

$$$$NAME
$$$$PW

Where NAME is the user and PW is the password.

The auto-logon file needs to be set up only once and then may be called each time you access a system.

PROGRAMMED PROMPT -- PX =

The DATA TERMINAL options for XON and XOFF provide flexible means of synchronizing file transfers from DATA TERMINAL to remote computers. You set the options appropriately, and the two computers obey the protocol and keep everything in order. But some computers, most notably many kinds of IBM mainframes, do things just a little bit differently. Almost everything is the same until the host computer sends the characters to the DATA TERMINAL to allow more of the file to be sent. These computers may not send an XON character. Instead, different operating systems may send different characters. The character used for this purpose is called the PROMPT CHARACTER.

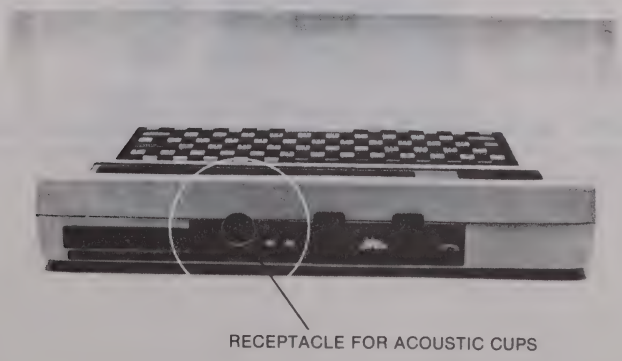
To make your DATA TERMINAL work with such systems, you need to include a clause in the format line between the margin warning value and the carriage return. If the prompt character you need is a "+", the clause would look like:

PX = +

There are just 4 characters in this clause and it should be surrounded by space characters.

These format line clauses are defined this way so that a complete file with special processing clauses could be sent from a host computer and SAVEd by a DATA TERMINAL. That way, field people would not need to "dirty" their hands with technical details.

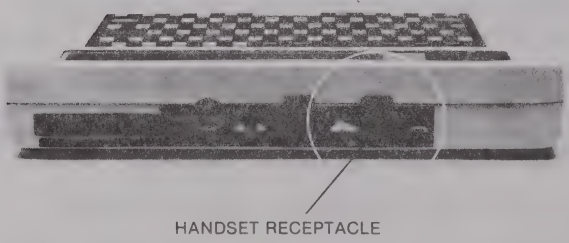
The next three items are located on the back of the DATA TERMINAL.



RECEPTACLE FOR ACOUSTIC CUPS

If you purchased and plan to use the optional acoustic cups, this is the place to plug them in. The cable attached to the cups should be plugged into the receptacle when the power is off. After dialing the remote device on your telephone set and upon hearing the tone through the earpiece, you should gently but firmly insert the handset into the cups. Be sure to put the handset in the proper way. The microphone in the cups must be with the earpiece from the handset and the mouthpiece from your handset with the speaker in the other cup. When a good connection is made and the COMMUNICATIONS MODE SWITCH and the MODEM MODE SWITCHES are set properly, you should see the LCD indicator LINE READY. Otherwise, check the switches and the cups. Some computer networks expect you to make the acoustic connection in a short time. Be sure that your switches are set OK and then practice inserting the handset into the cups quickly.

The best way to use your DATA TERMINAL is to make use of the following two receptacles to directly connect to the telephone.

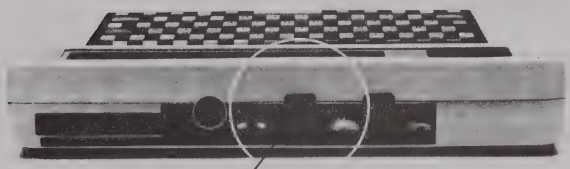


HANDSET RECEPTACLE

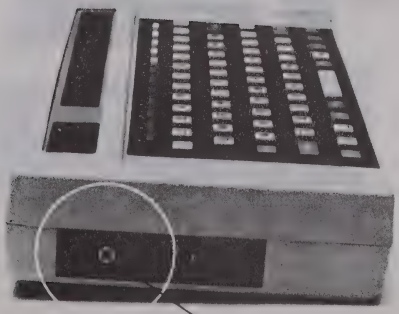
This modular receptacle is the place to plug the cable going to the handset into. You should have unplugged the cable of the handset from the base of the telephone.

BASE RECEPTACLE

This modular receptacle is the place to plug the base into. You will need the extra cable supplied with your DATA TERMINAL. Just plug one end of the cable into the receptacle on your DATA TERMINAL and the other into the receptacle on the base of the telephone. Remember that you unplugged the handset from this receptacle as described in the last paragraph.



These last two items are on the left side of the DATA TERMINAL.



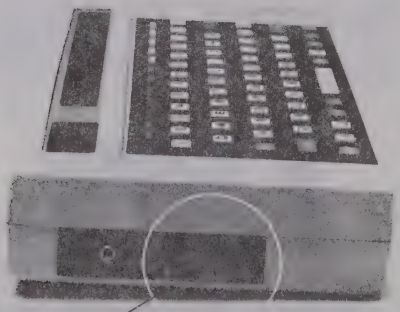
AC ADAPTER RECEPTACLE

WARNING - Never plug or unplug the AC adapter cable when the power switch is in the "ON" position.

This is where the Adapter/Charger plugs in. This item charges the NiCad battery or may be used to provide power for the DATA TERMINAL. Standard household or office power is all that is required: 110v AC 60Hz. Your DATA TERMINAL will draw only about 2 watts of power.

POWER ON-OFF SWITCH

Use this switch to turn your DATA TERMINAL on and off. All electrical connections to your DATA TERMINAL should be made with this switch in the off position. Of course, that means that the switch should be off when you plug the adapter cord in.



CONFIGURATION, CLOCK AND ALARM

Terminal Configuration
Factory
Custom
Parity
Inhibit
Err-Detect
Character-Data-Bits
Modem-Speed
Duplex
Control Characters
Alpha-Keyboard
Beeper
End-Of-Line Sequence
Transmit Mode
Login-Date/Time
Answer Back
Network Select
Clock Mode

Chapter 3

C O N F I G U R A T I O N , C L O C K A N D A L A R M

This chapter describes how to customize your DATA TERMINAL in order to make it more useful to you. When it was designed, the design contained several generalized capabilities. There were also several choices made between two equally useful features. You may choose to change those choices to suit yourself.

Details about the customize selections you can make fill up the rest of this chapter. But first, a few words about how you make the changes you want.

There are three kinds of changes for you to make. You can set configuration options to customize your DATA TERMINAL, you can set the clock to the correct time for the city in which you find yourself, or you can set the alarm. Your first choice is, which of these do you want to change?

Press SHIFT and SET together. The display will become as shown in the following figure. The cursor will be under the first letter of: configuration. If you want to customize your DATA TERMINAL by changing a configuration option, press the CHG key. If not, press the green, right arrow key to move the cursor to the next choice: clock. Press the green, right arrow key again to select the alarm for changes. In all cases,

> press the arrow key to move the cursor to the item you want to change, then press the CHG key to confirm your selection.

This process is the same for changing any of the configuration options. Changing the clock and the alarm values are similar, but slightly different.

---

set mode = configuration clock alarm

CHANGING CONFIGURATION OPTIONS

At this stage, you will have already pressed SHIFT and SET together, then pressed CHG while the cursor was under: configuration. The display will change to match the following figure.

Well, not exactly. The figure is a shorthand way of describing the two ways that the display might look at this point. The display will certainly read "terminal-configuration" in the left part. But, the right part might be either of two things, depending on what has happened in the past. When DATA TERMINAL are made, all of the options are set to factory specifications. Sometimes during testing or demonstrations, one or more of the options may be changed. The items between the " " and the " " signs are choices that you can make. The DATA TERMINAL will show only one of your choices, for any item, at a time.

To change an option, move the cursor to the choice you want to change, then press the CHG key. To go back to the previous option, press the CHG key again. Once you have selected an option, pressing the XIT key will put that option into memory.

This manual will show you all of the choices for each option and explain what those choices mean. You get to choose the way that each option is set.

---

terminal-configuration <factory>
<custom>

---

factory

This is a powerful option. When you set this option, all of the other options are changed to their initial, factory settings. Since a mistake here might be time consuming, you should be very careful to make the correct decision.

custom

This option indicates that the DATA TERMINAL is no longer set to factory specifications. If you change any of the options, this item will be automatically set to "custom".

The various options can be read from a series of display lines. How do you find the display line you want? The lines are discussed in the order in which they occur in the DATA TERMINAL. The arrows in the User Information Panel tell you if there are other lines "above" or "below" the line currently in the display. The left and right arrows tell where the cursor is in the line. You use the green arrow keys to move the display window and cursor up, down, left, and right to the item you want. No option is changed until you press the CHG key. You can examine the settings of all of the options, any time you like.

When you are done with examining and setting options, press the XIT key. The display will read the first line for option and clock setting. If you are all done, press the XIT again.

---

parity <even> inhibit <off> err-detect <off>
<odd> <on> <on>

---

parity

This option will be useful when communicating with some computers or terminals. The two values (odd and even) describe the code used for each character sent or received over the telephone link. The details are most interesting to mathematicians. You need to know only that most networks will work with either kind of parity. And, two devices, which are using parity, must both be even or both odd.

inhibit

Besides the mathematical value of the party function, you can decide whether to bother with any kind of parity processing. Set the inhibit option to "on" if you don't want to bother about it. For most network communications, this is the way you will want it.

err-detect

But, you might want to have inhibit set to "off" and the parity set to a particular type, and you might also want to know when the DATA TERMINAL receives a character that has bad parity. Set the err-detect option to "on" and all bad characters will be replaced by a funny symbol. With err-detect set to "off", the DATA TERMINAL will do its level best to display the character properly, even if it was garbled in transmission.

---

character-data-bits <8> modem-speed <300>
<7> <110>

---

character-data-bits

Your DATA TERMINAL uses the American Standard Code for Information Interchange. The ASCII code is a 7-bit code. A bit is a computer math concept. The number of bits per character is important to computers and terminals that use the code. Some computers expect all of the codes they use to be 8-bit codes. You can set this option to work either way. The 7-bit ASCII codes are embedded in a 8-bit code "envelope", with a leading zero bit, when you set the option to "8".

modem-speed

For most work, you will want your DATA TERMINAL to communicate as fast as the remote computer can accept data. Set the speed to 300. Sometimes a slower speed is required. In that case, set the speed to 110. The numbers "300" and "110" represent the number of bits per second that can be transmitted or received over the telephone.

---

duplex <half> <full> control-characters <off> <on>

---

duplex

It is your choice whether your DATA TERMINAL displays the characters you transmit or not. Many computers will send your characters right back to you as you type. This process gives you some assurance that the computer really did "understand" the things you typed to it. If the computer does send the characters back then your DATA TERMINAL should not also display them as you type. Set the option to "full" if the remote computer does echo your characters to your DATA TERMINAL. It is easy to tell if this is happening since every letter you type will show up twice when the option is set to "half".

control-characters

Appendix A contains a list of all the ASCII characters. The first two columns of characters (code values 000 0000 through 001 1111) are special purpose control characters. These characters are not a normal part of a human language. Set this option to "off" if you would prefer not to see these characters when they occur. Set the option to "on" when you do wish to know that there are control characters in the data you are reading. Most control characters will be displayed as x. The exceptions are ESCape, BELL, STX, ETX and CR.

---

alpha-keyboard <capital> <normal> beeper <on> <off>

---

alpha-keyboard

The setting "capital" causes the DATA TERMINAL to produce ALL CAPITAL LETTERS when you type on it normally. You can get little (lower case) letters by holding the SHIFT key down as you type. The setting "normal" causes the keyboard to behave as a normal typewriter would. That is, letter keys produce little letters unless you hold down the SHIFT key.

Only the letter keys are affected by the setting of this option.

One point to keep in mind is that your Personal Access Password must be typed with exactly the same letters and numbers, every time. So, if you originally enter it with all capital letters, and you turn your DATA TERMINAL off with this option set to "normal", you must use the SHIFT key to enter your Personal Access Password the next time you turn it on.

beeper

When the beeper option is "on", every key stroke will cause a little beep to sound off. With the option "off" there is no beep.

---

end-of-line sequence <carriage-return> <memory-Z-define>

---

end-of-line-sequence

What happens when you press the ENTER key? The answer, of course, is that it depends on what the DATA TERMINAL is doing. For ON LINE work and for use with the EDITOR, you can choose what the ENTER button will produce. In other cases, the ENTER key has special uses that are explained in the proper sections.

There are two things that the ENTER key can do. Most often, you will want it to produce the code for a carriage return (CR). That is the factory setting for this option.

Your other choices is to have the ENTER key produce one or more codes that you program. Some computers need to have both a carriage return (CR) and a line feed (LF) character produced at the end of every line. You can make the DATA TERMINAL produce this 2 character sequence by, first, setting the option to "memory-Z-define" and then putting the 2 character sequence into a file labeled "Z". Data is entered into a file with the EDITOR.

One more note, when the option is set to "memory-Z", the entire contents of the file are produced by the ENTER key. With this capability you can produce 3 character sequences or 300 character sequences if you wish.

---

transit-mode <-- -->> <auto>
<xon> <xoff>

---

transit-mode

These two options are also called "flow control", help synchronize the transmissions of files from DATA TERMINAL to remote computers. Even though the remote computer may be very large and fast, it may not be able to keep up with inputs from all of the terminals that may be active at one time. When some computers are very busy, they send a short message to a terminal requesting that the terminal stop sending for a little while. When ready, the computer sends another message to start the terminal up again.

In the basic case, the computer sends an XOFF control character. This character is also referred to as DC3 or as a CTL-S. When, once again, ready for input, the computer sends an XON control character. Also referred to as DC1 or CTL-Q.

Your DATA TERMINAL will respond correctly to these controls if you set these two options to: "xon" and "xoff".

When the first option is set to "xon" and the second option is set to "auto", the DATA TERMINAL will automatically give itself an XOFF character every time it sends a carriage return character (CR). You will need this setting for some system.

The factory condition for these options is to set the first one to "-- -- " and the second to "auto". With this set up, the special processing is ignored. Many networks do not support XON-XOFF processing. When you need it, you can get it. When you do not need it, you can save the extra charges associated with delaying the flow of information.

---

login-date/time <off> <on> answer-back <off> <on>

---

login-date/time

This option works with the SAVE function of your DATA TERMINAL. Whenever you save the incoming traffic, from the telephone link, into a file, this option allows an automatic capture of the current day-date-time at the front of the file and at the back. The function is similar to stamping the date and time on a letter received from the postman.

answer-back

This option allows your DATA TERMINAL to respond, automatically, to a request from the remote computer. The computer sends an inquiry (ENQ) control character to your DATA TERMINAL. It responds by sending the entire contents of file "Y" over the telephone. For this function to work, you must set the option to "on" and have a file labeled "Y".

One handy use for this feature is to enter a sales or inventory usage report into memory "Y". Hook your DATA TERMINAL up to the telephone system using a Automatic Answer Adapter. Then have the remote computer call up your DATA TERMINAL at some convenient time, request and capture the data. No one needs to be near the machine while this action takes place.

---

network-select <tymnet> <telenet> clock-mode <12 hr> <24 hr>

---

network-select

This option works with the Dow Jones (DJ) key. When you use the automatic sign on or Personal Portfolio processing, your DATA TERMINAL needs to "know" which network you called in to. Select the network that you will normally use.

clock-mode

The clock in your DATA TERMINAL can display the time in regular 12-hour format with AM and PM indications. Or, you can have it display the time in "military" or 24-hour format. Just set the option the way that is more useful to you. You can change the option any time you want, the clock will be OK.

Setting the clock and the alarm are a little different from setting the options. The first part, where you press SHIFT and SET then use the arrows and the CHG key to choose the item you want to set, is the same. Then things vary a little bit.

---

set-mode = configuration clock alarm

You will use the green arrow keys to move the cursor under the thing you want to change. But, once there, use the up or down arrows to change the value to later or earlier, respectively.

For example, suppose that the day of the week is really Wednesday but the clock indicates Friday. Move the cursor under the word "Friday", then press the down arrow twice. The display will show "Wednesday".

When the clock is set to 12-hour mode, the "A" or "P" will be changed as you change the hour.

<day of week> <month> <date> , <year> <time>

This is the way to display will look when you are setting the clock.

To return the "set mode = configuration clock alarm" screen, press the XIT key.

---

set mode = configuration clock alarm

The display for the alarm is different from the display for the clock. First, there is an option for you to choose. Should the alarm be "on" or "off". You make this choice by moving the cursor to the correct place and pressing an UP or DOWN key until you have it the way you want it. The time value has the hour and minute for the alarm to go off.

When the time is right, the alarm will go off. The beeper will beep. The display will ask you to type the XIT key to turn the alarm back off. When you do, the display will revert to whatever was on it before and the alarm-mode option will be set to "off".

Your DATA TERMINAL must be on for the alarm to work.

<off> <time>
<on>

4

EDITOR CONCEPTS AND OPERATION

About the Cursor
Margin Warnings
Edit Keys

Chapter 4

EDITOR CONCEPTS AND OPERATION

The editor program makes it easy to type letters, notes, message, etc., into your DATA TERMINAL. Changes and corrections are also easy to make. And, once you have made them, the corrections will stay in the memory until you dispose of them.

Generally, there are three main functions you can perform with the EDITor:

1) Type new data into your DATA TERMINAL;
2) Make changes and corrections;
and 3) Look at different parts of your data.

You can type new data with the light gray data keys by just typing on them. You can erase with the orange keys (LINE WORD, and RUB). You look at different parts with the green arrow keys. That is really almost all that you need to know in order to use the editor.

Of course, there are also some fancy things that you can do. They are a little more complicated, and they are explained later in this chapter. But first, a little more information about editor operations and a little conceptual background.

Your DATA TERMINAL editor stores your data in bunches called files. You can have up to 20 different files. So, how can you tell them apart? Every file gets a label. A label is a single character: a letter, a numeral, or a punctuation mark. You choose the label for a file the first time you type into the file.

Suppose that your DATA TERMINAL is brand new, and that you have nothing in the memory. Press SHIFT and LOCAL . The display will read:

select a file

The DATA TERMINAL is waiting for you to type the label for the file you wish to work on. For this exercise, type the letter "A". The screen will read:

created file "a"

It then will display "editor" for a second and then go to a blank screen except for the cursor at the lower left.

Now type the following sentence:

The quick brown fox jumped over the lazy dog.

Type the ENTER key. Your file "a" now has a complete line of text in it. The contents of the memory is text. This text is a complete line because you typed the ENTER key. That key places a little mark on the screen and a special character (carriage return) into the file. You can make a line as long or as short as you like.

Be a little careful. Many computers hang up on lines that are too long. You may see erratic or unexpected and unsatisfactory things on the display of your DATA TERMINAL. If, as you use your DATA TERMINAL to send files to remote computers, strange things happen, check for lines that are too long.

Type the following passage:

This is line 2. ENTER
This is line 3. ENTER
I'm tired of typing. ENTER

This particular file now has four complete lines in it. Type the UP and DOWN green arrow keys a few times each. As you do, the display window appears to move over the different complete lines. Notice, too, that the black UP arrow shows in the User Information Panel, whenever it is OK to press the green UP arrow to move the window. The black arrows work with the green arrow keys in just that the way to help you move the window and the cursor.

ABOUT THE CURSOR

Cursor

The cursor is a device to let you know where things will happen in the display. When you write using pencil and paper, it is easy to see where the next action will take place. On a typewriter, the plastic guard serves the function of identifying where the next letter will be typed or erased. On your DATA TERMINAL, the cursor is a space with a very low underline in it. As you press left and right green arrows, the cursor will move back and forth across the display.

A final point. The DATA TERMINAL cursor is a vacuum cursor. It really isn't there at all. It is never "on" or "over" a letter. But, rather it is always between two places for letters. When the cursor is between 2 letters, anything you type will go in between them.

As an additional exercise, let's change the word "brown" to "yellow". Use the green up arrow to find the first line of your text. Then, move the cursor until it is just to the left of the word "brown".

Now, press the WORD key. It is orange and in the top row.

The last step is to ahead and type "yellow" followed by typing the SPACE BAR in order to insert a space between yellow and fox. It is clearly more fun than to do the same work with a ball-point pen.

MARGIN WARNINGS

Your DATA TERMINAL may be used to prepare documents for other terminals, computers, word processors, news stories, books, and all kinds of uses. Some of these uses require lines that are longer than 40-column display or shorter. To help you prepare text for letter size paper printers, the editor has a built in margin warning signal. Whenever you type into the 72nd position on a line, or otherwise cause the line to become 72 characters long, there is a long sound from the beeper.

Suppose you don't want the warning at 72. Then you can set it to sound at some other value. The first line of memory file may contain format control information. You type in a special line which controls just when the warning will sound. The very first character is an ESCape. Next type in the size at which you wish to be alerted. Finally, end the line with the ENTER key. You can change this line at any time. It will NOT be sent with the rest of the file if you use the SEND feature.

The alarm will sound when you use the cursor mover keys (the green arrows) to move the cursor into a margin warning position. This is a handy way to count the characters in a line or to reformat a report in memory.

The format line looks like this:

E_s 72 :

You can also put some other things into the format line. These other things are optional clauses which can be used to aid in sending a file to a remote computer. These things are the PX = and PC = clauses explained in Chapter 2 in the section on File SEND.

EDITOR CONCEPTS AND OPERATION

EDIT KEYS

Here is a complete description of the operation of the editing keys.

Enter marks the end of a complete line of text. It places a CR character in memory and a little mark on the screen. (:)

Rub erase the character which is just to the LEFT of the cursor. With RUB you can immediately erase the last character you typed, if you instantly realize a mistake or change your mind.

Line erases the rest of this complete line. All characters to the RIGHT of the cursor, through the CR character, are removed from the file and from the display. The next line of text, if any, will come into the display.

Word erases the rest of this word. All characters to the RIGHT of the cursor, through the next space or carriage return character, are removed from the file and from the display.

▲ moves the display window up one line of text.

▼ moves the display window down one line of text.

◀ moves the cursor left one position. If there is more to the left end of the line than is displayed, the display window will be moved to the left to find it,

▶ moves the cursor right one position. If there is more to the right end of the line than is displayed, the display window will be moved to the right to find it.

Don't forget that if you use the SHIFT key along with one of the arrow keys, the cursor will move to the extreme position pointed to by that arrow. In other words, if the cursor is at the extreme left-hand position, a SHIFT ▷ will move the cursor to the extreme right.

There is a special feature to the UP and DOWN arrow keys. When you use them repeatedly, with no other keys in between them, the cursor will stay in the same position, in the line, where possible. If you have long lines mixed up with some short lines and the cursor is way out to the right of a long line and, further if you move the window past a short line, to another long line, the cursor position will be OK.

Xit — leaves the editor when you are through with your work on the file.

These keys allow you to do most of the work you may choose to do. The following keys allow you to do some things more easily than with the editing keys. They are very handy, but you don't need to know how to use them in order to make the DATA TERMINAL perform.

(Local) — allows you to select a different file to work on without using XIT to leave the EDITor.

All — starts the automatic playback of your file. The entire file will be played back through the display. Each line will show up for a short time. You can freeze the playback at any time by pressing an arrow key. The UP and DOWN green arrow keys may be used to back up or go forward. The GO key "unfreezes" the playback. When you are done with playback, press XIT to get back to whatever you were doing. Most of the other keys will also cause an XIT to happen and then, the normal function for the key.

Go — is used to resume playback after you have frozen the display OR to start a playback from the middle of a file.

Label — is used to break a file into 2 parts. All text to the right or below the cursor is put into a new file. You select the label for the file.

Search — allows you to command your DATA TERMINAL to find something in your file. You might have a person's name, a specific date, or just a word deep in the file. You could find it with the arrow keys or the playback function. But, to find it fast, use search.

The first step is to press the search key. If this is the very first time, your display will look like this:

---

search for =>

Type in the word you want to search for. RUB a mistaken character. CLR erases the whole thing. When the word is just right, press search again. Your DATA TERMINAL will find the word if it is in the file, after the cursor.

Press the SEARCH again, twice, and you can search for the second occurrence of your word. For the second search, you need not type the word again. When the word can no longer be found, the screen will look like this:

---

not found

It will then return you to the last occurrence of your word.

Ctl Clock — when pressed together, will place a copy of the current day, date and time into your file at the cursor.

Ctl Calc — when pressed together, will place a copy of the calculator memory into your file at the cursor.

Index — This key does two things for you. The normal thing is to show you a list of your files along with the size of each and the total amount of memory you have left to work with. The black UP and DOWN arrows in the user information window indicate when you are at the top, bottom, or in the middle of the list. The green arrow keys move the display window UP and DOWN over the report. Press XIT when you are done looking at the index.

The other thing you can do while examining the index is to completely remove a file from your memory. When the label of the target file shows in the display, press CLR . The screen will then read:

are you sure? (y or n)

Press the Y key if you do want to remove the file. Press N or any other key if you have changed your mind. Watch the display. When the file is removed, the space it had occupied is returned to the available space pool.

5

C A L C U L A T O R

Calculator Key Descriptions
Memory Operation

Chapter 5

C A L C U L A T O R

Built in to your DATA TERMINAL is a simple-to-use, 4 function calculator with memory. The memory is always visible, displayed on the left side of the 40 character display window. The current function (the last operation key you pressed: + - x ÷ or =) is displayed in the center. The working accumulator is displayed on the right side. When a number is negative, a '-' sign is displayed next to it, on the right side.

The keys to use and control the calculator are mostly in the top 3 rows. The number keys (0 1 2 3 4 5 6 7 8 9) are used to enter values. The keys in the middle row activate controls and functions. The symbols for what these keys do are printed, in yellow, just above the keys. The Q key is used for addition. The W key is used for subtraction. And so on. The green arrow keys are used to perform some special tricks with the memory.

Two calculator control keys are not with the others:

XIT and CLR .

These keys are in the bottom row, at the right side.

Finally, to activate the calculator, press and hold SHIFT and then press CALC. The rest of this chapter describes the calculator keys and works a few examples.

135768.2	+	32.
memory	operation	accumulator

CALCULATOR KEY DESCRIPTIONS

Simple Operation

1 2 3 4 5 6 7 8 9 0

These keys are used to enter numbers. Numbers go into the accumulator, which is displayed on the right side. With most other calculators, the accumulator is all you ever see. With your DATA TERMINAL, you can also see the memory. So, we need a name for the display on the right and the display on the left.

+	-	x	÷	=
Q	W	E	R	T

These keys are used to perform addition, subtraction, multiplication, division, and answer. Normal operation is to:

1) enter a number;
2) press an operation key;
3) enter the next number;
and 4) press the '=' key for the answer.

The answer is instantly displayed. Number and data keys are entered in the same order you would read them if they were printed: left to right or top to bottom.

example 1

14 + 32 = 46

type: 1 4 + 3 2 =

example 2

```
  743
- 295
-----
  448
```

type: 7 4 3 - 2 9 5 =

The calculator is a chaining type. So, if there are multiple operations to perform, you can just do them right in a row, without pressing "=" until the end.

example 3

15 x 7 + 4 - 12 = 97

type: 1 5 x 7 + 4 - 1 2 =

The operations are performed in the order that you type them.

CLR is used to clear a bad entry the operation is performed. The operation and the previous results are left intact. Press CLR again, and the previous results and the operation are also cleared.

I

This is the decimal point key.

+/-
0

Reverses the sign of the accumulator. Use it to enter negative numbers.

MEMORY OPERATION

M+ M-
Y U

These keys are used to add the accumulator (on the left side, remember) to the memory and to subtract the accumulator from the memory, respectively. Both memory and accumulator can contain up to 10 digits.

◀

This key stores the accumulator into the memory. It works like the STO key on some other calculators. The memory is not cleared when you leave the calculator, nor even when you turn your DATA TERMINAL off. So, to clear memory, first CLR the accumulator. Then ◀ it over to the memory.

▶

Loads the memory into the accumulator. This key works like RCL or RM on some other calculators. The memory is placed in the accumulator just as if you had typed the number in perfectly.

example 4

$$\frac{1 + 2}{23 - 9} = .2142857143$$

type: 2 3 - 9 = 1 + 2 ÷ =

Using memory can save you lots of work. And, you won't forget what is in the memory, since, you can always see it.

▲ ▼

Both of these keys to the same thing. They swap the accumulator and the memory. They work like the XCH key on some other calculators. This function is handy if you find that you have calculated the dividend of a problem before you calculated the divisor. You can save the dividend, calculate the divisor, swap them, and then divide. You won't have to re-enter the work.

Chapter 5

C A L C U L A T O R

Try the examples and become familiar with your new calculator. As you travel, and use your DATA TERMINAL, the built in calculator will offer you two significant benefits. First, you don't need to pack along a calculator. Second, you can put calculated results directly into an electronic memo, without retyping the answer. The memory can be copied into a file, when you are editing, with:

CTL and CALC together.

A P P E N D I X

American Standard Code for Information Interchange (ASCII)

		column							
row		000	001		010	011	100	101	110	111
0000	---	NUL	DLE	---	SP	0	@	P	'	p
0001	---	SOH	DC1	---	!	1	A	Q	a	q
0010	---	STX	DC2	---	"	2	B	R	b	r
0011	---	ETX	DC3	---	#	3	C	S	c	s
0100	---	EOT	DC4	---	$	4	D	T	d	t
0101	---	ENQ	NAK	---	%	5	E	U	e	u
0110	---	ACK	SYN	---	&	6	F	V	f	v
0111	---	BEL	ETB	---	'	7	G	W	g	w
1000	---	BS	CAN	---	(	8	H	X	h	x
1001	---	HT	EM	---	)	9	I	Y	i	y
1010	---	LF	SUB	---	*	:	J	Z	j	z
1011	---	VT	ESC	---	+	;	K	[	k	{
1100	---	FF	FS	---	'		L		l	|
1101	---	CR	GS	---	-	=	M	]	m	}
1110	---	SO	RS	---	.		N		n	→
1111	---	SI	US	---	/	?	O	-	o	←

Control Characters — Data Characters

All of these characters can be sent or received by the DATA TERMINAL.

Most of the central characters are displayed as x when the control-character option is set to: ON.

There are a few exceptions, as follows:

ESC is displayed as $^{E}_{s}$
BEL is displayed as .

STX is displayed as
ETX is displayed as .

The data in this table is arranged in rows and columns. The row and column designations are numbers are represented in the binary number system. The characters are normally sent as a string of binary digits, so the binary numbers are a convenience. In fact, the column number immediately followed by the row number are the American Standard Code for Information Interchange (ASCII). This is the widely used code found in timesharing services.

The code for the NUL data communication control character is:

000 0000

The code for the letter capital A is:

100 0001

which is equivalent to the decimal number 65.

The code 111 1010 is for lower case z.

Which is equivalent to the decimal number 122.

The codes are grouped so that all of the special purpose data communications control character codes start out with either:

000 or 001

The other codes are used for normal data characters.

There is a lot of interesting information to be found in the code table. For instance, the letters are in two groups each of which is in alphabetical order. In fact, the order of the characters in this table is commonly used to determine the sorting or collating order of information in a computer. You will also note that there is a fixed relationship between the capital letter codes and the "little" or lower case letter codes.

I N D E X

AC Adapter.....56
Acoustic.....37,53
Alarm.....24,72
All.....26,28,80
Alpha-Keyboard.....66
Answer.....39
ASCII.....92
Answer-Back.....69
Backspace.....47
Base.....54
Battery Compartments.....22
Beeper.....66
Break.....27,47
Calculator.....27,29,31,42,48,82-89
Caps.....43,66
Character Bits.....64
CHG.....48,59-60,62
Clock.....23,26,28,30-31,70,82
CLR.....27,29-31
Communication Mode.....36
Configuration.....23,59-72
Control Characters.....65
CTL.....27,29-31
Cursor.....77
Cursor Keys.....44
Custom.....61
Data Bases.....15
Date.....69
Display.....43
Direct.....38
Dow Jones.....19,26,28,45,70
Duplex.....65
Edit Keys.....79
Editor.....21,28,75-82
Electronic Mail.....13
End-Of-Line.....67
Enter.....26,28,49,79
Err-Detect.....63
ESC.....27,29,47
Exit.....11,30-31,47-48,62,71-72
Factory.....61
File.....75
Flow-Control.....68
Format Line.....29,52,78
Go.....26,28,48,81
Handset.....54
Help-Control.....11,47
HLP.....27,29-31
Hooking Up.....18
Index.....26,28,30,47,82
Inhibit.....63
Keyboard.....45
Label.....28,46,81
Line.....29,46,79
Line Ready.....41
Local.....21,16,41,48,75,80
Login.....69
Low Battery.....22,42
Margins.....78
Memory.....42,88
Modem Speed.....64
Network.....70
On-Offs.....56
On Line.....26,41
Options.....25,42
Originate.....39
Parity.....63
Pause Character.....50
Personal Access Password..40
Playback.....26,28,46,81
Power Switch.....56
Programmed Pauses.....50
Programmed Prompt.....52
PW.....48
Receptacles.....53,56
Rub.....27,29,47,79
Save.....21,42,49
Search.....28,47,81
Send.....21,42,49
Set.....27,48,71
Shift.....27,29,45
Speed.....64
Talk.....37
Time.....69
Traffic.....41
Transmit Mode.....68
User Information Panel....41
Wait.....39
Window Mover Keys.....44
Word.....29,46,79
Xit..11,30,31,47-48,62,71-72
Xoff.....42,52,68
Xon.....52,68

*** D I S C L A I M E R ***

NOTICE: THIS DATA TERMINAL IS BEING SOLD AS IS WITHOUT ANY WARRANTY AND WITHOUT ANY SERVICE OBLIGATION.